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OUR SHOREBIRDS AND THEIR  
FUTURE.

BY

WELLS W. COOKE,  
*Assistant Biologist, Bureau of Biological Survey.*

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[FROM YEARBOOK OF DEPARTMENT OF AGRICULTURE FOR 1914.]

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Illustration of Bank Swallow by Louis Agassiz Fuertes

## CONTENTS.

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	Page.
Introduction.....	275
The Wilson snipe.....	276
The woodcock.....	280
The upland plover.....	283
Other shorebirds.....	284
The Eskimo curlew.....	286
The smaller shorebirds.....	290
Protective measures.....	291
Conclusion.....	294

## ILLUSTRATIONS.

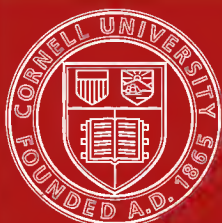
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### PLATES.

	Page.
PLATE XXI. Golden plover ( <i>Charadrius dominicus</i> ).....	282
XXII. Eskimo curlew ( <i>Numenius borealis</i> ).....	282
XXIII. Greater yellowlegs ( <i>Totanus melanoleucus</i> ).....	282

### TEXT FIGURES.

FIG. 16. Distribution of the Wilson snipe ( <i>Gallinago delicata</i> ).....	277
17. Distribution of the woodcock ( <i>Philohela minor</i> ).....	282
18. Distribution and migration of the Eskimo curlew ( <i>Numenius borealis</i> ).....	288



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## OUR SHOREBIRDS AND THEIR FUTURE.

By WELLS W. COOKE,  
*Assistant Biologist, Bureau of Biological Survey.*

### INTRODUCTION.

SHOREBIRDS<sup>1</sup> were found by the early settlers of this country in vast numbers on the coasts, the inland lakes, and even on the prairies, and while comparatively few now remain it was not until the early seventies that there was a marked lessening of their numbers. Since then shorebirds have been so persecuted that vigorous measures must be taken, and immediately, to save them. The principal causes contributing to their extermination are—the cultivation of the prairies of the Mississippi Valley, thus limiting the nesting and feeding grounds of the birds; the settling up of Argentina, their principal winter home, so that the birds are now under fire throughout the winter season; the decrease in number of ducks and geese, a circumstance which leads hunters to turn their attention to smaller game; the increase in the number of gunners, not only because of a larger population, but also because nowadays men and boys can easily obtain cheap modern guns; and the advent of the automobile, which takes hunters easily and quickly into remote places for week-end hunts. Under such conditions it is no wonder that shorebirds are being decimated and are rapidly disappearing from all their old haunts.

The problem of protecting our shorebirds is complicated by their extended migrations, which, part of the year, carry most of them outside the jurisdiction of the United States, for these birds are the champion long-distance migrants of the world. Few shorebirds put less than a thousand miles between their winter and summer homes, and most of them make a trip of several thousand miles each way. It is no exaggeration to say that most shorebirds nest close to the Arctic Circle and winter as near the Antarctic as they can find

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<sup>1</sup> The term "shorebirds," as here used, includes the snipe, woodcock, curlew, avocet, plover, godwit, killdeer, and yellowlegs, as well as the host of sandpipers and the little "peeps" which swarm along the sea beaches.

land on which to search for food; the longest migration trip is that of the knot, which breeds on the edge of land nearest the North Pole and in winter seeks bleak Patagonia and even more distant Tierra del Fuego. A distance of 9,500 miles, from latitude 83° N. to latitude 55° S., separates the extremes of the knot's winter and summer habitats. Only one other bird in the world breaks this record—the Arctic tern. The tern does not nest any farther north than the knot, but since it gleans its food from the ocean it needs no land during the winter and spends that season along the edge of the Antarctic ice pack a thousand miles or more beyond the southern extremity of South America.

The two members of the shorebird group most important from the standpoint of the sportsman are the Wilson snipe and the woodcock. These two species are so retiring in their habits that they are seldom seen, except by those hunting especially for them, and their food is such that they are neutral in their relation to agriculture. Apparently they are serving their highest usefulness when they become the quest of the hunter, and for this purpose they have no superiors. Fortunately both these birds have comparatively short migration routes. The snipe breeds in Canada and winters in the United States (see map, fig. 16), while the woodcock scarcely passes our boundaries during any time of year, and its migration consists merely in withdrawing during the winter season into the southern part of its breeding range (see map, fig. 17).

#### THE WILSON SNIPE.

The Wilson snipe, often called the English snipe, and usually the bird referred to when snipe shooting is mentioned, is the principal game target among the shorebirds. It is found over nearly all of North America (see map, fig. 16), and being a dweller of thickets and marshes, where usually it can be shot only when on the wing, its pursuit appeals to the real sportsman; moreover, so sudden, rapid, and irregular is its flight that it taxes the highest skill of the marksman. Snipe shooting has the recognized merit that it furnishes the largest returns of legitimate outdoor sport for the smallest loss of game-bird life, and if such sport is to be possible hereafter three essentials must be realized: (1) an increase, if possible, but no decrease in the supply of birds;

(2) such an arrangement of open and closed seasons that whatever birds there are shall yield the greatest amount of sport for the number killed; and (3) (especially in the case

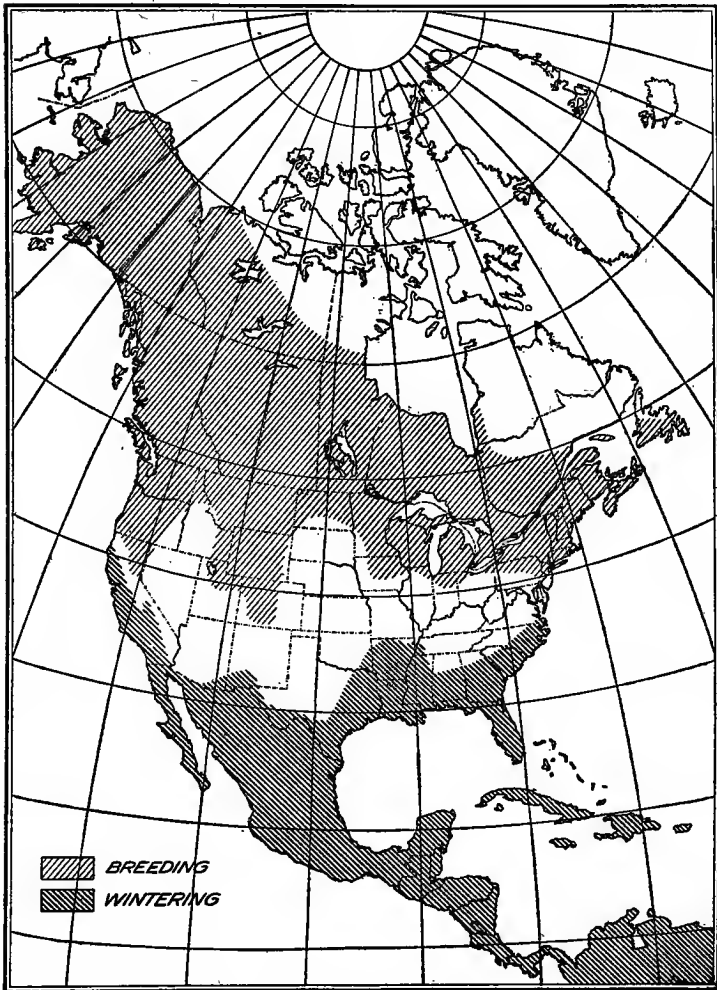


FIG. 16.—Distribution of the Wilson snipe (*Gallinago delicata*).

of the Wilson snipe) legal provision for distributing the number of snipe killed among the largest possible number of sportsmen.

All snipe hunters will agree that snipe have decreased decidedly in the past 25 years, and every student of the subject knows that this decrease is due principally to winter shooting in the southern part of the United States. The snipe nest principally in Canada, some even pushing north to the limit of tree growth almost to the Arctic Ocean, while a few nest in northern United States and south to the latitude of New York City (see map, fig. 16). They seem reluctant to return south in fall, even though they can have no appreciation of the constant persecution which awaits them during the six months' sojourn in their winter home. A few migrants appear in the northern part of the United States in early September, and, moving slowly southward, reach the southern part of the Gulf States shortly after the middle of October. Soon the main body of the birds follows, and all normally keep south of the line of frozen ground. Yet every winter some laggards remain much farther north, feeding about springs or streams. A few can usually be found on Cape Cod, Mass., while in the Rocky Mountains, near Sweetwater Lake, Colo., the presence of warm springs has enabled snipe to remain throughout an entire winter, though the air temperature fell to 30° F. below zero.

The number of weeks between the time migrants appear in the Northern States in sufficient numbers to afford fair shooting and that when most of the birds have been forced south by freezing weather marks the bounds set by nature to the length of the fall snipe-hunting season, usually from six to seven weeks in this section of the country. If all sportsmen are to have an even chance under the law, open seasons must be so regulated that the gunners in the middle and the southern parts of the country will be restricted to the same number of weeks. Unfortunately, under existing State laws the opposite condition prevails. Most of the Northern States do not open the snipe-shooting season until September 1—New York not until September 16—and there is not much good hunting after early November. On the other hand, when the birds reach the Gulf States in October they find the legal hunting season already open, and under the State laws they are subject to a continuous fusillade during the entire time of their residence in the South until



they depart the following spring for their northern breeding grounds.

Under this system the southern gunner has a shooting season about three times as long as that of his northern competitor and also a chance to bag even more than three times as many birds, because the Wilson snipe while in migration is erratic and likely to occur in numbers for only a few days in any one swamp or thicket, but after it reaches its winter home it congregates in certain favorite localities, where it is abundant every day throughout the entire winter. Winter shooting at these places in the Gulf and South Atlantic States is responsible for the heavy falling off in the numbers of the Wilson snipe. How they abounded formerly and how they were slaughtered by southern gunners is forcibly shown by the record of a single hunter in Louisiana, who, during the 20 years from 1867 to 1887, killed 69,087 birds, an average of 3,500 snipe a winter. In 1870 about 100 snipe were killed by this man for each day that he hunted. The maximum was reached in 1875, with 150 birds a day; this fell to 100 in 1880 and to 80 in 1887. Individual days far exceeded these average figures. The highest score for seven consecutive shooting days was reached in 1877, when, on December 8, 270 snipe were killed; December 10, 255; December 11, 366; December 13, 271; December 15, 286; December 17, 233; and December 19, 262—an average of 278 a day and a total of 1,943 birds in seven days of shooting. The bag on December 11—366 snipe—is supposed to be the world's record for slaughter by one man in one day.

With such butchery in its winter home, it is no wonder that the numbers of the Wilson snipe have markedly decreased. Aside from other considerations, such wholesale destruction is contrary to sound business principles. Among the better class of sportsmen such a hunter is sometimes called a "game hog," whether he shoots for his own table and that of his friends, as was the case in the instance cited above, or whether he is a plain market hunter, who kills thousands of birds as a means of obtaining a livelihood. Had these 3,500 snipe been obtained in one season by a hundred different gunners in widely separated localities, instead of by one man in one place, their sport value to the community would have been increased many fold.

Fortunately the breeding grounds of most of the Wilson snipe are in Canada, where the birds are protected by both law and custom throughout the nesting season. Moreover, their nesting sites are on land that will not for many years, possibly not for several generations, be used for agricultural purposes. Hence there is provided in Canada an enormous and favorable breeding area for these game birds, a region which formerly supported a snipe population many times more numerous than at present and which will continue to return to us in the United States each fall a liberal increase on whatever numbers we may allow to cross our northern border in spring.

The snipe has suffered in numbers probably more severely from spring shooting than any other shorebird. In spring migration it is not confined to any special district, as the coast or large bodies of inland water or the plains, but it occurs over nearly every square mile of its range, and in the past has run the gantlet of gunners throughout the whole course of its northward flight. Snipe shooting is at its height early in March in the central part of the South and early in April in the region just south of the breeding range; but pursuit ceases and security comes at the northern boundary of the United States. Our Canadian cousins have set us a most praiseworthy example in absolutely abolishing spring shooting; once the snipe has escaped beyond the fire of Uncle Sam's gunners it is safe from human molestation throughout the nesting season and until it begins the fall migration. It is uneconomical, to say the least, to kill birds in March and April while on their way to the breeding grounds, for if left undisturbed they will certainly return six months later with 50 to 100 per cent increase in number.

#### THE WOODCOCK.

Of late years much interest has centered around the efforts of the friends of the woodcock to obtain better laws for its protection and to educate the public to understand what a crime against nature and sportsmanship has constantly been committed in the hunting of this, one of North America's finest game birds. The habits of the woodcock are such that if given reasonable protection it will thrive and continue to be common even in a thickly settled country.

It nests on waste ground unfit for agricultural purposes and requires, as an inducement to remain through the summer, only a few square rods of soft dirt which can easily be probed by its long, sharp bill. With a wide breeding range in the Eastern States and southern Canada, but almost entirely limited to the United States, its future rests almost altogether with the sportsmen of our own country.

Formerly the woodcock was abundant throughout this whole area of a million square miles, and large bags were expected each year by the army of sportsmen who looked forward to the woodcock season as the climax of the year. Now its thousands have become hundreds, and even the most ardent woodcock hunters are seriously considering the advisability of the prohibition of all woodcock shooting for a series of years until the bird shall have recuperated from its merciless persecution.

This near extinction has been brought about by three agencies—winter storms, spring shooting, and summer shooting. The woodcock winters in the Gulf States and as far north as it can find unfrozen ground (see map, fig. 17). Hence a very large percentage of the birds remain each winter in a zone of hazard, where at any time they are liable to be caught by an unusually severe freeze and brought to the verge of starvation. Scant mercy has been shown them by man at such times. For instance, one report states—

A cold wave, accompanied by a gale, struck the coast of South Carolina on the morning of December 27, 1892, \* \* \* and thousands of woodcock were shot in the village of Mount Pleasant. They were everywhere—in the yards, stables, streets, and even piazzas. Everyone was out after the birds and everyone had a bag full to overflowing. On that day alone fully 2,000 were killed. On December 28 they were so abundant that every clump of bushes contained 10 to 15 birds. One man killed 58 without moving from his "stand" except to pick up the birds he killed. The flight lasted six days.

A still worse calamity overtook the woodcock on the coast of South Carolina in 1899, when, on February 14, the temperature dropped to 26° F. below freezing—almost zero weather. The woodcock arrived in countless thousands.

They were everywhere and were completely bewildered. Tens of thousands were killed by would-be sportsmen and thousands were frozen to death. The great majority were so emaciated that they were practically all feathers, and of course were unable to withstand the cold. One man killed 200 pairs in a few hours.

Even with the best of protection it would take many years for the woodcock of that district to recover from such a catastrophe.

The woodcock not only winters as far north as it can, but is the earliest spring migrant of the whole shorebird group, arriving in the latitude of New York City by the middle of March and reaching southern Canada by the end of that

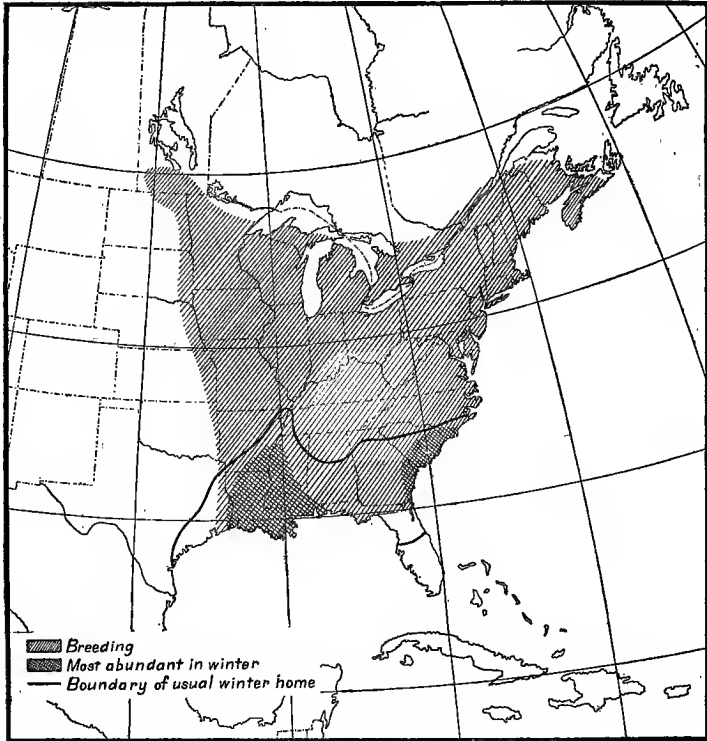
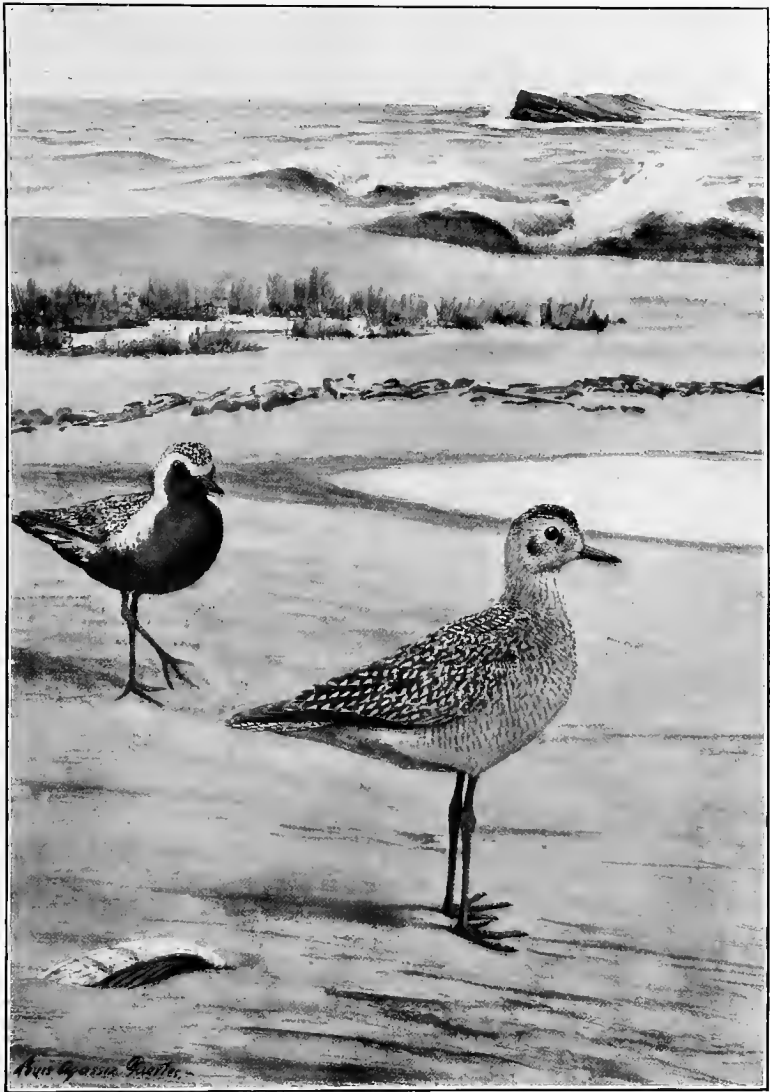


FIG. 17.—Distribution of the woodcock (*Philohela minor*).

month. This is, of course, before the leaves appear, and the ease with which the birds can then be seen makes this the favorite woodcock season of the pothunter. But in the whole year no season more destructive to the woodcock could be chosen. It migrates early because it wishes to nest early; indeed in Louisiana some of the birds are so anxious to start their housekeeping betimes that they lay their eggs in December. Throughout that part of the range north of



GOLDEN PLOVER (CHARADRIUS DOMINICUS).

[Lower figure, winter plumage; upper figure, summer plumage.]



ESKIMO CURLEW (NUMENIUS BOREALIS).



GREATER YELLOWLEGS (TOTANUS MELANOLEUCUS).





the winter home egg dates are so early as to make it certain that the birds are already mated when they arrive at the nesting grounds. Under such circumstances it is plain that spring shooting of woodcock is little less than barbarous.

But the pothunter is not willing to allow even the few young that may be raised a chance to grow to their full size and reach the condition in which they will afford real sport to a true sportsman. Hunters have been in the habit of beating the thicket for young birds only half to three-quarters grown; and the July massacre of these immature and easily taken fledglings was the final stroke in the series of disasters which has brought this fine game bird to the verge of extinction.

#### THE UPLAND PLOVER.

Another of our fine game birds is the upland plover. It also is one of those whose numbers have been dangerously depleted in late years and largely because of spring shooting. The main route of its spring migration touches the United States along the coasts of Louisiana and Texas, and from the middle of March, when the flocks appear in Louisiana, where they are known as "papabotte," until early May, when they pass beyond our borders into Canada, their ranks are constantly thinning under the fire of sportsmen and pothunters. In April, 1899, one man in southern Louisiana killed 117 in one day. Formerly more than half the upland plover nested within the boundaries of the United States, but now breeding birds are uncommon from Kansas to North Dakota, where originally they were most abundant.

Unfortunately, some of this loss is unavoidable, since the upland plover, as its name implies, is a bird of the open prairie, making its nest on the ground. In the Dakotas and Nebraska, where in the days of the cattle range the bird nested abundantly on the native sod and was almost undisturbed by the cowboys, thousands of square miles have been turned by the plow and now give support to a large population of grain raisers and dairymen. The same thing has happened and is happening in southern Manitoba and eastern Saskatchewan, where the birds—known locally as the "quaille"—used to be even more abundant than in the neighboring parts of the United States.

However, the recent extension of the plover's range into northeastern United States partially offsets this and offers much encouragement for the future. To a bird of the open country the originally heavy forests of the Northeastern States offered scant inducements. With the clearing of the land the plover has gradually extended its range east and northeast until it has covered the open districts of this section of the country. Here its numbers have actually been increasing during the past few years, even with the scanty protection afforded by local game laws; and this may well serve to stimulate interest in the protection of the upland plover until this valuable game bird again becomes abundant.

The mountain plover—a misnomer, for it is rarely found in the mountains—is unknown to the sportsmen of the East, but on the plains at the foot of the Rocky Mountains it was formerly a common game bird. Indeed, in eastern Colorado 30 years ago so abundant was it and so highly esteemed for food that one man shot 126 birds in one day. Now it is rare, and needs full protection to prevent its absolute extermination.

#### OTHER SHOREBIRDS.

The same fate is impending over the avocet and the black-necked stilt. When the first explorers crossed the Rockies on their way to the Pacific they found these two species nesting abundantly around all the larger lakes and marshes and at almost every place where permanent water insured a rank growth of vegetation. But these well-watered spots were naturally those most often visited by the explorers and hunters. As a result the avocet and black-necked stilt, being not naturally shy, have been completely exterminated over most of their range and only a few small flocks remain in the wildest and least accessible districts to serve as a nucleus which, under adequate protection, might save them from utter extinction.

The long-billed curlew is no better off. The largest of the shorebirds, it has been pursued because of its food value as well as for the sport it afforded. Its solitary habit has prevented large numbers being killed at one time, and its wariness has made the gunner earn whatever he obtained; nevertheless its summer home, where it was originally found in largest numbers—the northern plains region—has

of late years become so thickly settled that the curlew has been forced out. Indeed, it has been practically exterminated on the south Atlantic coast, where it was formerly an abundant migrant, and it is one of the shorebirds likely to become extinct unless carefully protected.

The case of the willet is almost as deplorable, for its breeding range, which on the Atlantic coast once stretched from Florida to Nova Scotia, has become restricted to a few small colonies on the south Atlantic, while it has ceased to exist over most of the northern half of the plains, where it was once a common and conspicuous bird.

The godwit is another of the shorebirds that formerly nested in the prairie region of middle United States; now it breeds over less than a quarter of its former summer home and has ceased to appear on the Atlantic coast north of Florida, where it was once among the not uncommon migrants.

There are several species of shorebirds whose connection with North America is so casual that they would hardly increase, even if the best of protection were given them both in the United States and Canada. The sharp-tailed sandpiper breeds on the northern coast of Siberia, and in fall crosses to Alaska, thence back again to Asia, and by way of Japan and China reaches its winter home in Australia. Thus it breeds and winters in the Eastern Hemisphere and appears in the Western Hemisphere for only a few days during migration. The Pacific godwit breeds in Alaska, and of course can be protected during the few weeks of its nesting season there; but then it deserts the Western Hemisphere and winters in Australia, using the chain of the Aleutian and Commander Islands en route. The ringed plovers, which breed on Ellesmere Land and in Greenland, cross to the Eastern Hemisphere and make a European tour on their way to Africa for the winter. The turnstone uses both the godwit and plover routes, the individuals which breed in Ellesmere Land wintering in Africa and those which breed in Alaska wintering in Asia and Oceania.

Most shorebirds in their long migration journeys leave the protection of the United States either in summer or winter; but there is one group in the Pacific that has a wonderful migration route, and yet does not pass beyond our jurisdiction. Some golden plovers (Pl. XXI) breed in Alaska and winter

in Hawaii, and thus can be affected throughout the year by United States legislation. Many turnstones, sanderlings, bristle-thighed curlews, and wandering tattlers have the same distribution, and all of them make the journey from Alaska to Hawaii—2,000 miles—at a single flight, probably the longest single flight made by any birds in the world. It seems incredible that any bird can be capable of such a feat, yet thousands make this trip back and forth every spring and fall; and there can not be the slightest break in the flight, because between Alaska and Hawaii there is not so much as a single square foot of solid substance on which the birds can fold their wings and alight. How long a time is occupied in such trips is not now known, and may never be learned. Most migratory birds, in crossing large areas of water, start soon after sundown and reach their destination before morning. But the Pacific golden plover flies the whole day as well as the whole night, and as it probably does not exceed a speed of 50 miles an hour, the single flight from Alaska to Hawaii consumes nearly twice 24 hours. How superior the bird's mechanism to the best aeroplane yet made! These feathered aeronauts remain in the air several times as long as the longest endurance test of the most modern aeroplane, and there is much the same difference in the efficiency of the two machines. The to and fro motion of the bird's wing would seem to be an uneconomical way of applying power, since all the force required to bring the wing forward to begin the stroke is more than wasted, because it increases the air friction and retards the speed. On the other hand, the screw propeller of the aeroplane has no lost motion. Yet less than 2 ounces of fuel in the form of body fat suffice to carry the bird at high speed over that 2,000-mile course. To be equally economical a 1,000-pound aeroplane would have to use only a single pint of gasoline in flying 20 miles instead of the gallon now used by the latest models.

#### THE ESKIMO CURLEW.

One of the most striking examples of the havoc wrought by man in the ranks of shorebirds is afforded by the Eskimo curlew (Pl. XXII). When Audubon visited the Labrador coast in 1833, he said of their numbers: "The accounts given of these birds border on the miraculous," and later, when he saw them for

himself, he reports that they "arrived in such dense flocks as to remind me of the passenger pigeons." In 1860 Dr. Coues notes that the Eskimo curlew "arrived on the Labrador coast from its more northern breeding grounds in immense numbers, flying very swiftly in flocks of great extent," the flocks containing "many thousands." Even as late as the spring of 1884 the writer saw curlews by thousands going north across the Oklahoma prairies. To one seeing those apparently endless lines of birds flying swiftly by, day after day, it would have seemed as impossible that this curlew could ever be exterminated as it did to the early settlers that the passenger pigeon should become a bird of the past.

To understand how the great reduction of their numbers was brought about so speedily one must understand the summer and winter distribution of the Eskimo curlew and its routes of migration.

The enormous ellipse of the Eskimo curlew route—6,000 miles in its longer and 2,000 miles in its shorter axis—is adopted by several other species of shorebirds, among which are the dowitcher, stilt, white-rumped and semipalmated sandpipers, lesser yellow legs, and golden plover. Various theories have been advanced to account for this eccentric course. The simplest explanation seems to be that which may be laid down as the fundamental law underlying the choice of all migration routes. Birds lay out that course between the winter and summer homes which is the shortest and at the same time furnishes them most plentiful and attractive food supplies. The seven birds named are birds of treeless regions; they summer on the tundras and winter on the pampas. An unlimited food supply, especially palatable, attracts them in fall to Labrador, whence they take the most direct route to South America. To attempt to return by the same course in spring would be suicidal, for Labrador awakens slowly from its winter sleep and at the time of spring migration is still covered with ice and snow.

The principal breeding range was on the Barren Grounds near the Arctic coast in the northern part of the Canadian Province of Mackenzie (see map, fig. 18); the birds wintered for the most part in the campos region of southern Argentina and northern Patagonia. As soon as the fledglings were large enough to care for themselves, old and young hastened to

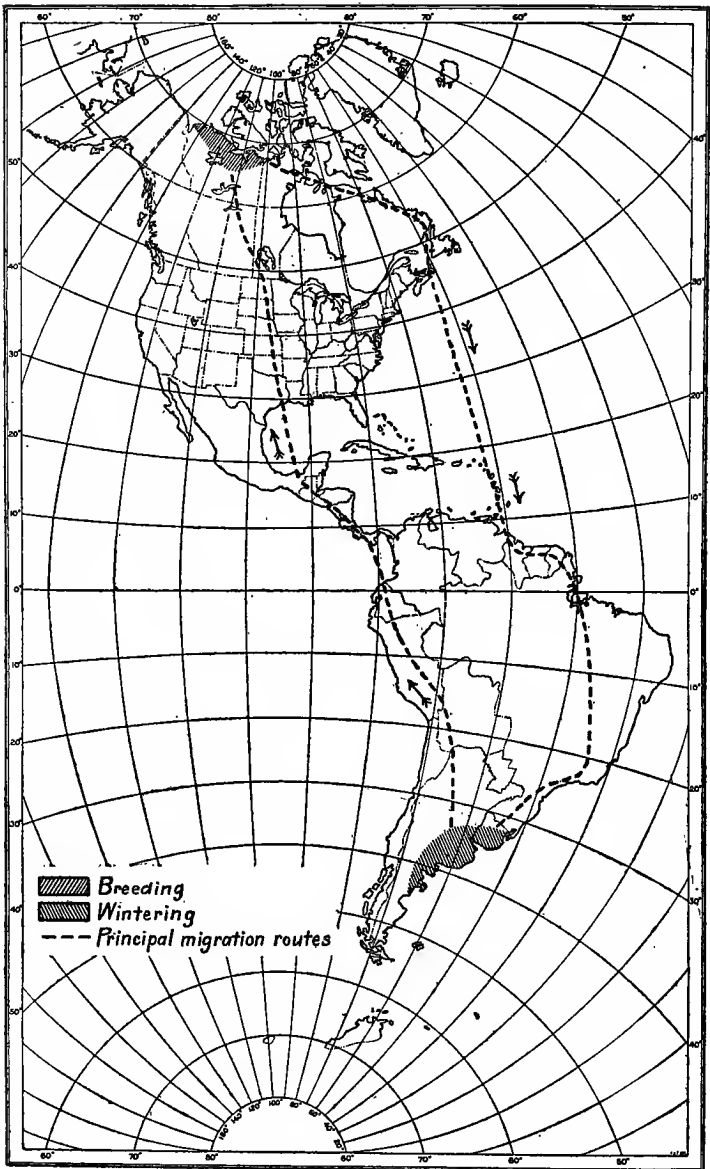


FIG. 18.—Distribution and migration of the Eskimo curlew (*Numenius borealis*).

the coast of Labrador to feast on the so-called "curlew berries." After a few weeks of gorging they flew across the Gulf of St. Lawrence to Nova Scotia and thence launched out over the ocean for a 2,400-mile flight. Reaching South America they crossed the eastern part of Brazil to their winter resort in Patagonia. In spring the whole course of their fall migration was abandoned and the curlews made their way north by a route some thousands of miles farther west over the prairies of the Mississippi Valley. Here the bird was abundant and well known. It arrived in Texas in early March and journeyed at a leisurely pace toward the breeding grounds, being common in April from Kansas to South Dakota.

These enormous flocks now exist only in memory; scarcely a dozen individual birds have been seen in the last dozen years. The cause of their disappearance is not far to seek. The Eskimo curlew was undisturbed by human foes during the whole of its summer sojourn in the Arctic, and only a small percentage were shot on the Labrador coast; but after arriving in Argentina in the middle of September, for a five months' stay, the birds scattered over the pampas and were continually a mark for hungry sportsmen. Later, from early March to early May, the flocks were beset by gunners on the Texas and Kansas prairies. As long as the Argentina campos and the United States prairies were the home of the cattleman, the Eskimo curlew lessened in numbers only gradually; but lately, especially since 1880, with its winter home in Argentina changed to a great wheat field, and its favorite prairie sod in our West converted into thickly populated farm lands, no chance for life has been left to the curlew. Of all the birds which adopt this migration route, the Eskimo curlew suffered most from man's onslaught, probably because of its habit of congregating in close flocks instead of the loose, straggling parties of its migration companions. Audubon noticed this peculiarity on the Labrador coast and says that when the birds were feeding on the ground they kept so close together that half a dozen could be killed at a single shot, and that when they started in flight the whole flock gathered in a bunch, thus giving still further opportunity for wholesale slaughter.

## THE SMALLER SHOREBIRDS.

The smaller shorebirds, or sandpipers or "peeps," as they are commonly called, which are not large enough to be considered legitimate game birds, number about 30 species, or about half of all the species of the shorebird group in North America. Along the eastern United States coast are hundreds of miles of shore exactly suited to their needs, and until about 1870 these places swarmed with countless thousands of the dainty creatures, which made a charming and ever-shifting panorama as they moved from one feeding place to another, thus adding an attractive touch of life to the wind-swept beaches. Then, as the great flocks of ducks and geese shrank under the attacks of the market hunter until they ceased to supply the ever-increasing demand for game, the market hunters turned to the tiny shorebirds. These unsuspecting victims, bunching so closely that dozens of the mites could be killed at a single discharge, were shipped to market by the wagonload to furnish a scant mouthful of meat apiece as the only return for the destruction of one of nature's most beautiful creations. The assaults of the market hunter were supplemented by the incessant attacks of the boy, who, with the modern small-bore high-power gun, views anything alive as a fair target, and of late years he has swarmed in summer on the beaches from Virginia to Maine.

A peculiarity in the migration of the smaller shorebirds increases opportunities for their destruction. Many remain nearly all summer along the coasts of the United States, with only a few days between the disappearance in June of the last northbound migrants and the reappearance in early July of the vanguard of the fall migration. Thus in the case of the greater yellowlegs (Plate XXIII), the last leave Long Island going north the last week in May and return on their southward journey the middle of July; while in the case of the knot, the breeding area lies north of the Arctic Circle and the earliest spring migrants do not arrive there until about the first of June, yet fall migrants enter the United States early in July at just about the time the first eggs are hatching in the Arctic nests. It is certain that these very early fall migrants can not have raised families that season. It is not known whether these are birds which for one reason or another never bred



after they reached the northland and started at once on the return journey, or whether they are disappointed pairs whose eggs have been destroyed, and which, instead of attempting a second nesting, as is common among birds in temperate climates, began forthwith their southern flight, knowing instinctively that if a second set of eggs should hatch, the young birds would surely perish in early autumnal storms. Be that as it may, shorebirds become numerous on the beaches soon after the first of July, and during August, the month of the greatest outpouring of city dwellers to the seashore, many species reach their full-fall numbers and consequently are subject to the greatest harassment as they flee from beach to beach vainly seeking a place of refuge.

#### PROTECTIVE MEASURES.

So much for the former abundance of the shorebirds and their present-day diminished and still diminishing numbers. What has been done to check the approach of extinction and what prospect does the future hold for ultimate success in shorebird preservation? Several years ago it became evident to advocates of bird protection that reliance could not be placed solely on State laws and local regulations. Though these were steadily being improved and an awakened public conscience was bringing about better law enforcement, yet it was only too plain that laws were nowhere sufficiently stringent, and that by the time they had improved enough to afford real protection no shorebirds would be left to be protected.

The only alternative, therefore, was recourse to Federal legislation; and after many years of agitation a National law for protecting migratory game and insectivorous birds was passed by Congress in 1913. Under its provisions the Department of Agriculture is given full authority to determine what shall be the closed seasons, and to prepare regulations for their observance. The committee in the department which has the matter in charge has been glad to accede to a widespread request from bird lovers that the small sandpipers be withdrawn from the list of game birds and be given protection throughout the year. To this list has been added the curlew, avocet, godwit, and some of the plovers, which have already been reduced to a small fraction of their

former numbers, and are rapidly nearing extinction. Since it was evident that protection in addition to that provided by existing State laws must be given also to the remainder of the shorebirds, it was beyond question that the best way to afford part of this needed extra protection was to prohibit all spring shooting. Within a few years a great revolution has taken place in public sentiment regarding spring shooting. Even ignoring the barbarity of shooting a mated bird, the conviction has become general that a given bird population will furnish the best sport and the greatest amount of that sport if shooting occurs only during fall migration, when the birds are at their best. Indeed, this belief has become so general that in all the speeches and discussions before both committee and Congress in regard to a National migratory game-bird law it was taken for granted that one of the Federal regulations would be the absolute abolition of all spring shooting. So complete had been this understanding that the framers of the regulations felt as much bound to include in them the prohibition of spring shooting as though it had been specifically mentioned in the act of Congress.

But as the shorebirds needed more than merely to be allowed a peaceable journey from their winter homes to the breeding grounds, summer shooting also has been prohibited and the opening of the hunting season has been placed late enough in fall to make it certain that even the latest hatched birds shall be full-grown and strong of wing before they become the gunner's mark.

To accomplish this the following regulations have been adopted by the Department of Agriculture, approved by the President, and now have the force of law:

*Shorebirds.*—The closed season on black-breasted and golden plover, jacksnipe or Wilson snipe, and greater and lesser yellowlegs shall be between December 16 and September 1 next following, except as follows:

Exceptions: In Maine, Massachusetts, New Hampshire, Rhode Island, and on Long Island the closed season shall be between December 1 and August 15;

In New York, except Long Island, the closed season shall be between December 1 and September 16;

In Minnesota, North Dakota, South Dakota, and Wisconsin the closed season shall be between December 1 and September 7;

In Oregon and Washington the closed season shall be between December 16 and October 1;

In Florida, Georgia, and South Carolina the closed season shall be between February 1 and November 20;

In Alabama, Louisiana, Mississippi, and Texas the closed season shall be between February 1 and November 1;

In Tennessee the closed season shall be between December 16 and October 1;

In Arizona and California the closed season shall be between February 1 and October 15; and

In Utah the closed season on snipe shall be between December 16 and October 1, and on plover and yellowlegs shall be until September 1, 1918.

*Woodcock.*—The closed season on woodcock shall be between December 1 and October 1 next following in the Northern States and between January 1 and November 1 in the Southern States, except as follows:

Exceptions: In Connecticut, Massachusetts, and New Jersey the closed season shall be between December 1 and October 10;

In Rhode Island the closed season shall be between December 1 and November 1;

In Pennsylvania and on Long Island the closed season shall be between December 1 and October 15;

In Delaware and Louisiana the closed season shall be between January 1 and November 15;

In West Virginia the closed season shall be between December 1 and October 1; and

In Georgia the closed season shall be between January 1 and December 1.

Whether or not these closed seasons will prove sufficient to arrest further diminution of the shorebird population only time can tell. Meanwhile, it is desirable to have further protection in fall along the seashore. Here the modern idea of bird refuges can play a most important part, and fortunately it can be put into effect at comparatively small cost. The beaches of the Atlantic coast are largely given over to summer cottages of city people. A great majority of these temporary dwellers-by-the-sea take no satisfaction in killing shorebirds and would far rather welcome to the sands in front of their homes such lovely visitants from the North, birds of delicately shaded plumage and graceful motion. A strong, concerted movement would obtain the cooperation of a large majority of these cottagers in a campaign for the stopping of all shooting on the beaches; while their united efforts would go far toward creating a public sentiment which would bring about the adoption and observance of local regulations which would be an efficient aid in the enforcement of the Federal law.

The miles of seashore recently withdrawn from the hunter, in the Ward-McIlhenny bird reserves of southern Louisiana

and Mrs. Russell Sage's Marsh Island near by, are striking examples of what can be done in this direction by private initiative. The proposed reservations on the Florida coast are still more important from the shorebirds' standpoint. Scattered along this coast and also on that of Texas are large areas seemingly especially intended by nature to meet the particular needs of shorebirds. As they congregate in these resorts in great numbers for many weeks of the year, such places should next be brought under the control of the shorebirds' friends.

The beneficial results of the above-outlined efforts at shorebird protection should be manifest within a very short time, because almost all the shorebirds, except the woodcock, have their breeding grounds in Canada, where they find acceptable nesting conditions and an abundance of food. A large percentage nest in the Arctic, where they are free from all interference of human beings, and even in the settled parts of Canada they are not subject to slaughter, for Canada has a first-class game law for shorebirds that is rigidly enforced. Birds which gunners of the United States allow to escape to their breeding grounds may there have an excellent opportunity for raising a numerous progeny.

#### CONCLUSION.

From the foregoing paragraphs it is evident that shorebirds are an important asset in the country's wealth; that their recent decrease in numbers has been due principally to excessive shooting; that State laws have proven inadequate to check this diminution; that the only hope of preserving shorebirds lies in Federal legislation; but that with a wise Federal law, wisely administered, and with an awakened and enlightened public sentiment to aid in its enforcement, there is every reason to believe that the shorebirds will again become common enough to enliven the beaches and lake shores with their welcome presence and to afford the hunter a fair amount of legitimate sport.